

ent No. 5,742,812 issued to Baylor et al. (hereinafter "Baylor"). Applicant respectfully traverses the rejection for the following reasons.

Description of the Invention

The present invention is directed to a computer system in which a first process, preferably residing in a server node, maintains a data file. A second process, which may reside at a client node, generates a first message that requests the first process to grant to the second process a plurality of tokens that are required to modify at least one characteristic of the data file. In response to the request, the first process generates a second message that grants the tokens to the second process, if they are available. If any of the tokens are unavailable, i.e., one or more of the requested tokens were previously granted to some third process, the first process may generate a third message directing the third process to relinquish those tokens. In response, the third process may generate a fourth message relinquishing the identified tokens.

Notably, the number of tokens requested in the first message is a plurality of tokens. Likewise, the third and fourth messages may each specify a plurality of tokens, namely the tokens whose previous grant is to be revoked and relinquished, respectively.

Description of the Cited Reference

Baylor is directed to a technique for synchronizing requests in a parallel or distributed file system having a plurality of client nodes coupled to a plurality of server nodes. The server nodes store files that can be accessed by the client nodes. To improve the system's efficiency, a given file may be stored at or across multiple server nodes, and may be accessed by multiple client nodes. Such an arrangement, however, requires that the requests be syn-

chronized at all the server nodes, i.e., it requires that the requests be executed by all of the server nodes in the same order even though they may be received in different orders. Without a synchronization mechanism, the files at the different server nodes will become inconsistent. Baylor, Col. 1, lines 49-65.

To achieve synchronization, Baylor organizes all of the server nodes into a fixed order or hierarchy relative to each other. Baylor, Col. 3, lines 28-30 (“To implement this invention, the set of server nodes is ordered once and for all time, usually from 0 to N-1, where N is the number of server nodes”). Next, each request is broken up into a plurality of components such that each component is sent to a different server node having the given file. The server node that is the lowest in the fixed order, referred to as the primary server node, sends a token to the next higher server node upon receiving its request component. Baylor, Col. 4, lines 63-65 (“a token will be generated by the primary node in response to receiving the primary access component message”) and Col. 5, lines 16-14 (“The token is generated by the primary node and relayed from the primary node to the next subsequently higher number file server node”). To ensure that requests are processed by the server nodes in the same order, Baylor configures its server nodes such that execution of a request at a particular server node “cannot be initiated until the token corresponding to that request has been received, and until tokens for all prior requests have been received and their corresponding access components executed or initiated.” Baylor, Col. 5, lines 24-28. In sum, with Baylor a single token is generated for each file access request and that token is passed only among the server nodes.

Differences between the Present Invention and the Cited Reference

Claim 1 recites in relevant part as follows:

“a first process that **maintains a data file in a computer-readable memory**”,

“a second process that generates a **first message** requesting that said second process be granted by said first process a **plurality of tokens** required for said second process to **modify at least one characteristic of said file**”, and

“said first process generating a **second message** . . . that grants said **tokens** to said first process”.

In other words, the present invention recites a second process that explicitly issues a request (the first message) for a plurality of tokens that are needed to modify a data file. The first message, moreover, is specially configured to request a plurality of tokens. The first process responds to the request by issuing a second message that, in turn, is specially configured to supply the plurality of requested tokens to the second process. The art of record, including Baylor, fails to teach or suggest such an arrangement.

First of all, in Baylor, no process or entity ever issues a request for a token. Instead, a token is automatically generated by the primary server node in response to receiving a primary access component message from a client node. Baylor, Col. 4, lines 63-65 (“In accordance with one aspect of the invention, a token will be generated by the primary node in response to receiving the primary access component message”). Thus, Baylor fails to teach or suggest applicant’s claimed generation of a first message requesting a plurality of tokens.

Second, with Baylor, the single token generated automatically by the primary server node is not returned to the client node that issued the primary access component message.

Instead, Baylor's single token is sent to the "next subsequently higher numbered server node". Baylor, Col. 5, lines 17-18. Indeed, Baylor refers to its system as a "token passing mechanism", i.e., a mechanism in which a token is passed among the server nodes. In contrast, as described above, the present invention recites a second process that issues a first message requesting a plurality of tokens, and a first process that generates "a second message, in response to said first message," granting the requested tokens. Baylor provides no teaching or suggestion for such a request-response arrangement. No entity in Baylor ever issues a request for a token.


Furthermore, Baylor fails to teach or suggest a plurality of tokens associated with a given file as recited in the present invention. Instead, with Baylor, only a single token is generated for each file access request. In particular, at Col. 4, line 63 and at Col. 5, line 57, Baylor notes that it is "a token", i.e., a single token, that is generated in response to the access request. At Col. 5, line 16 and line 66, Baylor confirms that it is "the token", i.e., the one single token that was generated for the access request, that is passed among the server nodes. Thus, Baylor fails to teach or suggest this aspect of the invention as well.

Independent claims 11, 21, and 39 similarly recite the issuance of a message requesting a plurality of tokens that are required to modify at least one characteristic of a file. Independent claims 6, 20, and 33 recite the issuance of a response message that includes the requested tokens needed to modify at least one characteristic of a file, and independent claims 14, 19, 27, and 30 recite both the request and the response. Accordingly, these claims are also distinguishable over Baylor as well as the prior art of record for the foregoing reasons.

Applicant submits that the application is in condition for allowance and early favorable action is respectfully requested.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,



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